

AVIATION

The Oldest American Aeronautical Magazine

NOVEMBER 10, 1924

Issued Weekly

PRICE 10 CENTS



Fighting the boll weevil—Cotton dusting plane being loaded with calcium arsenate

VOLUME
XVII

SPECIAL FEATURES

THE INDEPENDENT AIR FORCE
THE NAVAL AIRCRAFT INVESTIGATION
FLIGHT TESTING OF NEW LIGHT PLANES
THE SHENANDOAH'S GREAT FLIGHT

NUMBER
19

GARDNER PUBLISHING CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office at Highland, N. Y.,
under Act of March 3, 1879.



NEW YORK

LIVERPOOL

COMMENTING on the Around-the-World flight, a splendid achievement, which will stand exclusively to the credit of the American airmen, Glenn H. Curtiss, builder of airplanes, pointed out that this flight heralds the establishment of trans-Atlantic service by airplane.

The success which has attended this daring flight has instilled more courage in people than any other achievement of its kind and has greatly advanced the cause of commercial aviation, on which, at present, capital is afraid to take a chance.

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of whom remained in the air thirty minutes, flying 24½ miles. That it was not until 1910 that the great London Daily Mail was called upon to pay the \$10,000 it had offered as a prize for a flight from London to Manchester (a distance less than 200 miles) within twenty-four hours.

Compare these then marvelous flights with the records of 1924. An endurance record of more than 86 hours. A nonstop flight of more than 2,700 miles, an altitude record of seven miles, a speed record of 266 miles per hour. A regular and dependable coast to coast air mail service, functioning effectively day and night. Mr. Curtiss is conservative.

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NOVEMBER 10, 1924

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Published every Monday

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GARDNER PUBLISHING COMPANY, Inc., Publishers

GENERAL AND EDITORIAL ROOMS: 224 FOURTH AVENUE, NEW YORK

Publication office

HIGHLAND, N. Y.

Subscription price: Four dollars per year. Single copies
are 10 cents. Canada, five dollars. Foreign, six dollars
a year. Copyright 1924, by the Gardner Publishing
Company.

Issued every Monday. Forms close ten days previously.
Entered as second-class matter Nov. 20, 1905, at the
Post Office at Highland, N. Y., under act of March
3, 1875.



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GENERAL MANAGER

VOL. XVII

AVIATION

NOVEMBER 10, 1924

NO. 19

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\$70,000,000 A Year

THE Secretary of Labor, James J. Davis, in a recent article in the *Prize Policy* of the Coolidge Administration made a statement which for the first time gives from an authoritative source the cost of the government's aeronautical activities.

Secretary Davis writes as follows: "While we present estimates in all parts of the air service amount to some \$70,000,000 each year, because this branch of the service is still in a state of experimental status, a considerable amount of expense is still necessary, though. It is evident that it is in the field that we may expect the largest development."

After much searching and comparing AVIATOR has been able to find about \$80,000,000 that is being spent on government air activities. It is therefore of the greatest interest to learn that a Colonel officer gives the sum of ten million dollars more. Probably the figures will later be presented in a more definite form since it is growing to such large proportions.

If the aeronautical efforts of the Army and Navy representation for Medical, Quartermaster and other branches of the Army and Navy were included, the amount would be still larger. Then, the cost of the two new aircraft carriers, the Lexington and the Saratoga, which will probably total \$60,000,000, should also be considered. Well informed persons have the opinion that the government's aeronautical expenditures since the War have been about a half a billion dollars more than the entire wartime air expenditures.

The operations of the airships are so evident that only those writing a desire to reduce government expenditures can be cited to them. There should be some one person on the Boarders branch of the government with the power to superintend of this vast sum so that expenditures and waste may be avoided. Congress, too, should have a similar committee to consider the aeronautical problems of the government. When this situation comes into being—as a result, sooner or later—there will be a great change for the better in American aviation.

Government Airships

GENERAL PATRICK has proposed that the airship Los Angeles (NC-2) be turned over to the Air Service and that it then meet the Shenandoah to the North Pole. It has been generally hoped that the proposals for polar exploration were forgotten and would not be revived. No such government money invested in these two airships and the opportunity for serious experimentation available, for determining both the naval and commercial use of this type of aircraft, it seems inopportune to assume the public with the idea of spectacular dashes to the Pole.

the exact value of which could only be for publicity, and which, were the to fail, would cause the ship to sustain heavy losses.

AVIATOR, in agreement with almost all lighter-than-air experts, believes that the Shenandoah should conduct its experimental activities to determine its value to the fleet. If the rapid airship has value, if it can be used as a long distance aerial or as an auxiliary carrier, as can point the way to further development, it will have served its purpose. The problem of the missing ship is as yet far from being solved, despite the success of the Shenandoah's flight to the West Coast. In seeking the missing craft pursued, the ship could render a service that would considerably advance the art of dirigible operations. To send it to the North Pole before every practical experiment has been made would be a waste of opportunity.

The Los Angeles, on the other hand, is a commercial type airship. The Army and Navy intend to use it largely for training purposes. The government paid a large sum of compensation money to get it. It cannot be used for military work. If it is to be operated by the government after the missing period, this should be done in the form of a subsidized commercial service line, possibly across the Atlantic. There is where a real test could be made. While those who know dirigible best claim that the Los Angeles is only half large enough for commercial success, the ship's weight nevertheless can be used for determining the stability and maneuverability of airships for commercial air transportation.

Any dividing upon these two lines of action seems to be in the direction of best opportunity. The public wants to know whether the Shenandoah and the Los Angeles are worth the money it has put on them. The North Pole flight can wait, the ship's value to the government has been fully established.

Cost of Excess Weight

FIGURES as the cost of excess weight on airplanes are very difficult to secure. An ingenious method has just been formulated AVIATOR. It bases its calculations on the Air Mail cost of \$7.80 per ton-mile to transport mail which requires 100 lbs for carrying one pound 700 miles.

Suppose a pilot or a part could be reduced in weight, what would the savings be in cost of operations? In this particular example one instrument weighed 20 pounds and cost \$25. Another weighed 12 pounds and cost \$10. The extra cost would be paid for by the cost per pound-mile in 1000 miles. At a speed of 120 miles an hour it would pay for itself in 16 hours, 5 minutes flying time, and it would cause a saving of \$2,500 in 1000 flying hours.

None, at first, is something for the pilot to save to do in these moments of leisure. The possibilities are limitless. But after all, except as a commercial service, what are a few dollars among friends when the government pays the bills?

The Independent Air Force

By C. G. GREY

Editor of *The Aeroplane*, London

When in 2001 the idea of an Independent Air Force, as a Third Service separate from the Navy and Army, was first advanced in England, nobody was more opposed to it than myself. The suggestion that the Air should have a Service of its own, on the principle of one Service for the Sea, one for the Land, and one for the Air, seemed naturally silly, because it was clear that the Navy and the Army, also, had seemed evident that an aircraft at any time could be used as a vehicle which should carry a soldier or a sailor to his favored objectives. And it seemed impossible that there could be anything in Air War which could not be managed by a soldier or a sailor.

Particularly there was the excellent argument that competition, good for roads, and that with the Navy and the Army competing for aerial ascendancy, for the best aircraft, and best possible equipment in all fields, would be most rapid, and that the Trade with a capital T would make more money, on the principle of a plodding, slow, taciturn organization in Palestine of which it was said that it went there to do good and had done very well over there.

The Army, the Navy, and the Air

But, as the result of many and a long year at a separate Air Force, with a privately held Air Ministry of its very own, one is convinced that an air service is not only the best, but, in fact, would provide in a far more rapid and effective manner, the best possible equipment for the various services, on the principle of a plodding, slow, taciturn organization in Palestine of which it was said that it went there to do good and had done very well over there.

The Navy, the Army, and the Air should be separate Services, but the Navy should be separate from the Army. In fact, States have only been separate Services for a few hundred years. All the great naval battles of the Greeks and Romans were decided in Land, and were fought by soldiers on board ships, where the ship commanders put where the Romans ordered them. All the great naval battles of the English seafarers were ashore. And it is evident that, whether the English seafarers were a slaves, or a slaves that the English seafarers should put with the Romans.

The Navy only began to fight its own battles when naval supervised crews and ship-masters demonstrated that because they had not men they could not put them where the soldiers wanted them. And even then, as a matter of history, naval crews fighting the Navy was not. Today, ship-masters can again be put where they are wanted, without any resistance, and after the lamentable exhibitions given by all the Navies concerned in the War 1914-18 there are now students of war who believe that ship-masters should again do as they are told by the primary fighting Services.

But, what, since it is admitted that Navies are regarded all over the World as being distinct from Armies, is it really logical that Air Forces all over the World should be distinct from both Navies and Armies?

The True Role of Air Power

So much for theory, reality and logic. What is much more important is the practical advantage of having an independent Air Force, as against what has had all these years and as Italy is in process of having now. Much more is deserved.

The plain known reason is that so long as the flying people are merely sections of the Army and the Navy, they will always be regarded as so adjunct to the fleet, and as an auxiliary to the army. And as long as that is so, air power will never be regarded as the primary fighting force.

And, in contrast, on the traditions of the 19th and 20th centuries, the Air Force is not a craft for seafarers or for gunnery, or even for speedily dropping bombs on flying machines. But always the underlying idea will be to get the "Battle Fleet" in touch with one another.

The Germans used their aeroplanes as well as 1914-18 that they very neatly snared Queen Victoria, because the British Navy refused till the very end to accept that they should have been used. And it was only after the Queen Victoria came into being in 1918 and had a true naval craft that it was that the Germans and Americans got snared in the submarine war.

War Experiences

The British Navy steadily refused to take their guns spotting the Belgian coast from aircraft flying right over the target. And at the Battle of Jutland only one solitary aeroplane of the air, and then the Navy paid no attention to it.

The only continuing people who were ready to co-operate with aeroplanes were the Hellenic Marine people from Crete, who, in particular, would, under instructions, work in many exercises, and even, on occasions, by their own forces, when forces had not yet turned to base and turned to evasions and merchant seafarers, and naval forces which had been turned into auxiliary craft.

The unfortunate commanders of corps-de-sapeurs and gunnery trains and so forth were always good for air raids, but the Navy, by their own experience that Naval raids were ineffective, as far as they were concerned, whereas aircraft had not only to make a reconnaissance, but also to complete a complete guarantee of safety. But the Navy never paid any concern. It was only when the R.A.F. took charge of all affairs that the air was used as it should have been used from the start.

The Key to the Situation

The Army was far less patronized than the Navy. Its auxiliary task is spotting trains. The air quite naturally, the units not only accepted the reports of air scouts, but, except a lot more than the aircraft could do in the early days of the war. The mapping department of the Army mapped the world onto the photographs of the Royal Flying Corps. The infantry worked whole-heartedly with the aeroplane, and the aeroplane was concerned with every portion of the country's industry. In fact, Army co-operation with the R.F.C. was almost perfect.

But, and that was the whole key to the situation, the aeroplane were always used to get the Allies out of the mess, or to help it, or to help it to counter an enemy attack. Airmen were never used as a primary fighting force. Even those who were used as a primary fighting force, were not even in command of an army, and, after the lamentable exhibitions given by all the Navies concerned in the War 1914-18 there are now students of war who believe that the ship-masters should again do as they are told by the primary fighting Services.

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England's First Line of Defense

Since then the Royal Air Force has progressed in strength to strength, till today with its 3,000 officers and men, it is officially recognized by the Government as the last line of defense from the Navy, which, in 1918, was the Royal Flying Corps. The R.F.C. in France in 1918 had for commanding the R.A.F. in France as 1918 and has for the two years been U.O.C. all British Forces in Iraq (Army bases). The job of the Home Defence Air is to repel attacks on the British Isles, and for that purpose the Committee of Imperial Defence, which includes the Navy, and Air Force has decided that the Navy and Army operate under the orders of the Air Officer Commanding.

Now, apart from the exalted position and the great responsibility given to the Royal Air Force, consider how the whole system operates.

Organization Scheme of the Air Ministry

The Air Ministry exists separate from the War Office and from the Admiralty. The Secretary of State for Air is the head of the Cabinet on a par with the Secretary of War and the First Lord of the Admiralty, so that air affairs are so strongly represented to the Government as are the affairs of the Army and Navy. The Air Ministry has to make good. And the more so, that today the Air Ministry gets as much money as it can get, and, in consequence, does not have to go to the R.A.F. or the Royal Flying Corps, for the purchase of new aircraft and new engines. (The two were made one in order to be built out of a supplementary note, in addition.)

The Chief of the Air Staff (Lieutenant General Trenchard) is a member of the Committee of Imperial Defence, and, as First Vice-Chief of the Imperial General Staff (Lord Cunard) and the Vice-Secretary of the Admiralty (Lord Balfour). So here also the Air Council is properly represented.

The Air Council, in the Air Ministry itself, includes heads of the Secretary and Undersecretary for Air and the Clerk of the Air Staff, a member for Personnel and the Clerk of the Air Staff, and Air Surgeon and Air Engineer.

Personnel, Supply and Research

The Clerk for Personnel is concerned solely with the affairs, the pay and costs of the R.A.F. Personnel is by merit and not in seniority. As a young officer does well, he is promoted out the ranks in order and has less to care. He does not have to care, and, with the promotion, slight increments of thousands of old soldiers or sailors need not trouble up the seniors but.

Officers and men are detailed to stations and jobs for which they are specially chosen. If mistakes are made, as they are, they do not get paid quite quickly, because everybody is concerned with the pay of all the officers and men. There is no waiting while seniors provide money through officers and sailors who are concerned with other areas.

The Clerk for Supply and Research is concerned solely with seeing that the Air Force gets the best possible equipment and enough of it. He and the chief of his sub-department care for supply, one for experiments and tests, and the other for stores. The chief of the R.A.F. is in charge of the flying and engineering personnel of the R.A.F. on the one hand, and with the Aircraft Industry on the other hand.

The declared policy of the Air Council is to encourage R.A.F. enterprises and to pursue a system of contracts which will keep alive some twenty bases which have survived the war, and which have been of great service to the R.A.F. and the Aircraft Industry to that before one contract is completed another one will begin, so that design staffs may be kept employed and so that the skilled workshop may be kept at work in their own factories instead of shifting from one to another, or leaving the Aircraft Industry for some other branch of engineering.

The Air Force Comes First

In fact the whole essence of the Air Force is that everybody, from the Air Minister downwards is concerned with the Air Force, the whole Air Force and nothing but the Air Force.

Part of the job of the Air Ministry is to supply men and machines to the Navy for what is now called the Fleet Air Arm. This, naturally, in its extreme endeavor to deserve the title of Fleet Air Arm, set up a separate Air Force, the Air Ministry, as regards the Navy. The Air Ministry, however, did not remain long, afterwards that it actually had an attack on its air service carriers, built or building under the Washington Treaty, and to the Navy whether it would place these in the Fleet, where the aircraft with appropriate weapons were to be deployed.

The Admiralty's reply is still awaited. But the question will we have been asked if the Air Ministry's system of

Supply and Research had been much short of 300 per cent efficiency.

Another part of the job of the Air Ministry is to supply men and machines for the Army's air work. On that side there has been no trouble. The Army has always been given all the aircraft it has wanted. For the Army, the Admiralty and the Air Force always accept immediately and cordially all the new ideas which the Air Co-operation branch of the R.A.F. invents or develops from time to time.

Planning Aerial Warfare

Albert and himself all the Air Staff and the Department of the Chief of the Air Staff, which covers Operations and Training, is constantly developing the art of aerial warfare against the Navy and Army. The R.A.F. has its own Staff College, which cooperates cordially with the Army Staff College, and with so much of a Staff College as the Navy has got. And it is closely concerned with the study of the War Office, the Admiralty and the various bureaux of the Service of War, which is the greatest of all areas of interest, as it does all other sciences, physiological and psychological.

One never asks whether, having fully considered what has been done and what is being done in the little experimental Air Force of Great Britain, the reader of this sketch deprecates the idea that much could be done by flying over water, which is already a valuable branch of older and ordinary Services, such as are necessarily bound by their own limiting conditions.

For instance, the work of the Air Ministry also covers the control of Civil Aviation, this has largely refuted many sayings about this subject as it has no direct connection with the arguments for or against an Independent Air Force.

Air Mail Notes

The Air Mail Service operating night and day from New York City to San Francisco, carrying 100,000 pieces of mail, has proven itself as far as dependability and safety are concerned. Postmaster General New announced upon receipt of a photostatic copy of the following letter.

"Mr. J. T. Pease, Postmaster,
San Francisco, California.

Reference to your inquiry, we are pleased to state that we are not making any additional charge for airmail, as we stopped its airmail mail, and do not believe that any of the companies are going to make any additional charge for this class of service.

The Postmaster has been under close observation and the Postmaster General has been satisfied to write Air Mail shipments at the ordinary rates.

Yours very truly,
T. B. DAVIS
Master Underwriter."

In the last two years and nine months the Air Mail Service has carried 2,000,000 tons of mail across the continent, only 125 lbs of which amount was destroyed, according to Luther E. Davis, traffic manager of the service, in a talk recently made before the San Francisco Patriotic Club at the Hotel

"In the calendar years 1922 and 1923 and for the first six months of 1924," said Mr. Davis, "the Air Mail Service operated only by day. Since July 1 it has been operating both day and night. In the two years and nine months period referred to, we carried three months—July 1 to Sept. 30, 1923, both day and night, and from Aug. 1 to Dec. 31, 1923, quantity 580,000 pieces of mail were destroyed. Of this quantity only 5000 pieces were destroyed. In other words, only one letter was lost out of every 24,000 carried. This is a record of safety as safe as any recorded by surface means of transportation, and far more reliable than that.

In the period above referred to, Air Mail Service planes have flown 613,000 miles en, carrying the equivalent of a freight train of 100 cars, each car loaded to capacity."

disseminated, over the service being made the espionage as what started out, according to press accounts, as a purely speculative. On the heels of the "rumor" of "Navy" itself, by the Hearst newspaper in Washington, the President let it be known that he desired to take up with the Naval Board the question of aviation development in the Navy. His views as interpreted by the press caused consternation in Naval circles, as they showed a strong leaning toward the use of "mechanical" theory that aircraft had developed to the point where it threatened the service.

Mr. Coolidge is quoted as having serious doubts about the practicability of spending any money on the modernization of the Navy's aircraft, none of which can be replaced within the next five years, and as having coupled with a reference to the reason the world fleet is democratic that aircraft development had made the maintenance of parity on the surface fleet on the basis of use a waste of public money.

He followed this up with the appointment of a board which was to be soon being wired and had such an important tribunal as an exhaustive investigation of all phases of the airplane-had-day controversy, the service felt that the whole situation could have been avoided had that and good would have resulted.

Controversy Likely to Be Heightened

The service takes, however, in referring the question to the General Board of the Navy, it is generally believed, will serve merely to heighten the controversy and accomplish only the useful purpose of a better understanding throughout the service of the aviation letter.

On the other hand, having a very definite and clear-cut air policy which was formulated within the last few years since the armament conference, and being as nearly as one can hope for that the leadership was still in the hands of the service, can not now produce any findings on any other basis, as no new developments have occurred in the subject since the time of the general board.

At present the General Board can do an leaning toward a more broad policy toward aviation in the Navy, will not match the evident propositons of the airplane as a means of war weapon. But it need not reflect that an attack will be

launched on the board's findings and that the fight will heat up again when Congress convenes. Indicative of this, often mentioned in the recent speech of General Mitchell, Assistant Chief of the Army Air Service of Dayton, in which speaking as the "representative" of President Coolidge for the occasion, he openly advocated a separate air force had predicted an early cessation.

Air Situation in Navy

Great changes have been made from time to time that naval aviators have not been fully aware in the possibilities of aviation and the importance of developing it. In the case of some few individuals these have been some hostility shown toward recognition of the value of aircraft and there is a general reservation over the "airman" tactics used in some quarters to force aviation at the expense of the Navy generally. The "airman" world, however, has been quite successful in its efforts to gain the support of the House of Representatives for adequate air preparations. It forced the original estimates reduced the Navy and opposed the budget cut. The real "thunder down" on airplanes in the Navy has been on the hands of a very few officers, but with the ranks and file on the defensive in kind of the "obscurant" party that would oppose the Navy, the general board has given the impression that the higher grades have obstructing all efforts to steadily advance the air defenses.

Under pressure from the Secretary to "consider the most developments in aviation for the purpose of recommending a policy with reference to the development and adoption of the airplane as a means of war," the General Board has decided to make at the earliest possible time of the year, the "General Board has charged me to investigate, thoroughly, through fully aware of the conditions to be faced."

With the Secretary taking part most of the time, findings are being held twice daily, the sessions lasting two or three hours, and the results of the investigation will be made known to the Bureau of Aeronautics and other technical bureaus, forming a framework for what is to come. It is proposed to have Rear Admiral Fullam, Rear Admiral Ross, General McMillan and other airship proponents of aviation, and every effort will be made to give all sides a hearing.

The Shenandoah's Great Flight

From Lakehurst to Ft. Worth, San Diego, Seattle and Return

At midnight of Oct. 25-26 the Shenandoah, commanded by Cmdr. E. L. Landenberger, U.S.N., returned to Lakehurst, N. J. from the Pacific Coast after the longest flight ever made by any airship. The flight covered a total distance of 5,000 miles, for all kinds of weather were encountered, and the ship being exposed to the elements either in the air or at a mooring mast for nearly three weeks. The flight was a great triumph for the engineers who designed the ship, for the men who built it, and the men who handled it. The crossing of the Rocky Mountains in particular, was as severe a task as could be expected for any ship, and the flight was a test of the ship's ability other than a demonstration of its actual military use in cooperation with the Navy, but it did prove that aircraft as a means of war could make its to the, and operate from points long removed from a base.

In our last issue we described the Shenandoah's flight from Lakehurst to San Diego. The repairs necessitated by the loss of the gas袋, the damage to the gas袋, the gas袋 ruptured and the ship did not leave for Camp Lewis, Wash. until Oct. 26. She carried 46 men on board, as follows:

Rear Admiral William A. Moffett, Chief of the Bureau of Aeronautics, observer and passenger.

Ensign Cmdr. Edward Landenberger, U.S.N., commanding officer.

Ensign Cmdr. E. B. Houghton, U.S.N., executive officer.

Ensign J. B. Lawrence, U.S.N., watch officer.

Lt. A. B. Houghton, U.S.N., watch officer.

Lt. W. H. Miller, U.S.N., airship officer.

Ensign C. E. Beach, U.S.N., watch officer.

Ensign E. W. Sheppard, U.S.N., engineer officer.

Chief Machinist S. H. Lakehurst, U.S.N., assistant engineer officer.

Ensign G. D. Palmer, U.S.N., radio officer.

Ensign J. R. Anderson, U.S.N., meteorological officer.

Ensign E. W. Almoe, U.S.N., assistant radio officer.

Ensign J. W. H. Bunting, representing press.

Ensign H. H. Bowes, U.S.N., airship chief.

Ensign F. W. Weston, aviation chief rigger.

C. A. Heeklark, aviation rigger first class.

F. G. Tolson, aviation chief rigger.

F. P. Aller, aviation chief rigger.

L. W. Aller, aviation chief rigger.

A. C. Carlisle, aviation chief rigger.

J. E. Clegg, aviation chief rigger.

F. E. Flockhart, aviation chief rigger.

J. B. Collier, aviation chief rigger.

J. E. Denli, aviation rigger first class.

R. G. Gladwin, aviation mechanics mate first class.

Ames Burton, aviation chief mechanic.

J. C. Cullinan, aviation chief mechanic mate.

J. W. Steward, aviation chief mechanic mate.

C. E. Brown, aviation chief mechanics mate.

L. E. Calhoun, aviation chief mechanics mate.

J. D. Green, aviation mechanics mate first class.

T. D. Johnson, aviation chief mechanics mate.

Ralph James, aviation mechanics mate first class.

W. H. Spaulding, aviation mechanics mate first class.

C. F. Matson, aviation mechanics mate first class.

F. C. Moore, aviation mechanics mate.

T. C. McRae, aviation mechanics mate.

T. C. McRae, aviation mechanics mate first class.

C. E. Solar, aviation mechanics mate first class.

J. F. Hahn, ship's cook first class.

Fighting Money Games

On its way north from San Diego the ship landed strong head winds, necessitating its turns to almost due north to cross the tail of the head winds the ship did not pass over San



From transparencey
Cmdr. E. L. Landenberger, captain of the Shenandoah, sketching from his cockpit on the tail of the meeting point at San Diego.

Frances, but held a course quite a ways out to sea. The next night Cmdr. Landenberger, finally, on the morning of Oct. 26, but rather than risk flying into the clouds as he waited and the end of the evening when the sun reappeared and the ship was brought down to the mooring mast.

The next morning there was a fog and so the sun did not warm up the gas. Ballast could have been thrown over board, but that would have meant taking holes when the ship would reappear in the gas and it was decided to wait until the sun was high. The ship lay at the mooring mast until the sun was high. D. again had to battle with the gas through a storm, but reached San Francisco about 2 p. m. on Oct. 29. San Diego was reached the next morning, the Shenandoah having broken the last time line by more than eight hours.

Gas Replaced at Mooring Mast

On Oct. 29 the wind started to blow over the Shasta and the Rockies. It had been hoped that a non-stop flight to Lakehurst would be made, but the winds were not entirely out of the question and on the night of Oct. 29 the commanding officer of the ship in the cold caused the ship to throw over some 3,400 b. of gas. This was as all the water ballast in order to keep the altitude of 7,000 feet and necessary in crossing the high mountain areas.

The ship reached Fort Worth, Tex. on Oct. 28 after a rather bumpy trip over the mountain plains of

Texas. There 180,000 cu. ft. of helium were put on board the ship and she started on the last leg of her flight on the next day. Lakehurst was reached at midnight on Oct. 29. San Diego was reached on Oct. 30, the ship having been in the air near the ground with 15 deg. colder air than the air up and as soon as this was done the ship was brought down into the end zone it became more buoyant by comparison.

The greatest credit is due to Commander Landenberger and the crew of the Shenandoah for this magnificient flight, for in the course of the meeting of the ship is due credit of the success of the voyage. The ship, with the 200 cu. ft. of helium and the 100 cu. ft. and the crew did not tire when it landed at Lakehurst.

In speaking of the trip, Commander Landenberger emphasized the value of the meeting mast, saying that the mast was like a post in a stream and that the longer it remained in a river the stronger it became.

"We discovered that the Rocky Mountains present a formidable obstacle to a ship using helium gas. It cannot be overcome whenever you want to go altitude or hydrogen gas can do it. We found that we could not go up more than 6,000 ft. without losing helium. I thought that a ship longer than the Shenandoah could carry enough fuel to get a higher ceiling."

All of the Shenandoah crossed in the neighborhood of 8,000 feet, the time being about 255 hr. or an average of 6.16 hr. per 100 miles. The average speed was generally about 60 m. per hr. Following is the log of the flight.

Day	Arr. Lakehurst	Dist. from San Diego	Altitude	Speed
Oct. 25	San Diego	0	0	0
26	San Diego	200	200	2.00
27	San Diego	400	400	2.00
28	San Diego	600	600	2.00
29	San Diego	800	800	2.00
30	San Diego	1,000	1,000	2.00
31	San Diego	1,200	1,200	2.00
Oct. 31	San Diego	1,400	1,400	2.00
Nov. 1	San Diego	1,600	1,600	2.00
Nov. 2	San Diego	1,800	1,800	2.00
Nov. 3	San Diego	2,000	2,000	2.00
Nov. 4	San Diego	2,200	2,200	2.00
Nov. 5	San Diego	2,400	2,400	2.00
Nov. 6	San Diego	2,600	2,600	2.00
Nov. 7	San Diego	2,800	2,800	2.00
Nov. 8	San Diego	3,000	3,000	2.00
Nov. 9	San Diego	3,200	3,200	2.00
Nov. 10	San Diego	3,400	3,400	2.00
Nov. 11	San Diego	3,600	3,600	2.00
Nov. 12	San Diego	3,800	3,800	2.00
Nov. 13	San Diego	4,000	4,000	2.00
Nov. 14	San Diego	4,200	4,200	2.00
Nov. 15	San Diego	4,400	4,400	2.00
Nov. 16	San Diego	4,600	4,600	2.00
Nov. 17	San Diego	4,800	4,800	2.00
Nov. 18	San Diego	5,000	5,000	2.00
Nov. 19	San Diego	5,200	5,200	2.00
Nov. 20	San Diego	5,400	5,400	2.00
Nov. 21	San Diego	5,600	5,600	2.00
Nov. 22	San Diego	5,800	5,800	2.00
Nov. 23	San Diego	6,000	6,000	2.00
Nov. 24	San Diego	6,200	6,200	2.00
Nov. 25	San Diego	6,400	6,400	2.00
Nov. 26	San Diego	6,600	6,600	2.00
Nov. 27	San Diego	6,800	6,800	2.00
Nov. 28	San Diego	7,000	7,000	2.00
Nov. 29	San Diego	7,200	7,200	2.00
Nov. 30	San Diego	7,400	7,400	2.00
Dec. 1	San Diego	7,600	7,600	2.00
Dec. 2	San Diego	7,800	7,800	2.00
Dec. 3	San Diego	8,000	8,000	2.00
Dec. 4	San Diego	8,200	8,200	2.00
Dec. 5	San Diego	8,400	8,400	2.00
Dec. 6	San Diego	8,600	8,600	2.00
Dec. 7	San Diego	8,800	8,800	2.00
Dec. 8	San Diego	9,000	9,000	2.00
Dec. 9	San Diego	9,200	9,200	2.00
Dec. 10	San Diego	9,400	9,400	2.00
Dec. 11	San Diego	9,600	9,600	2.00
Dec. 12	San Diego	9,800	9,800	2.00
Dec. 13	San Diego	10,000	10,000	2.00
Dec. 14	San Diego	10,200	10,200	2.00
Dec. 15	San Diego	10,400	10,400	2.00
Dec. 16	San Diego	10,600	10,600	2.00
Dec. 17	San Diego	10,800	10,800	2.00
Dec. 18	San Diego	11,000	11,000	2.00
Dec. 19	San Diego	11,200	11,200	2.00
Dec. 20	San Diego	11,400	11,400	2.00
Dec. 21	San Diego	11,600	11,600	2.00
Dec. 22	San Diego	11,800	11,800	2.00
Dec. 23	San Diego	12,000	12,000	2.00
Dec. 24	San Diego	12,200	12,200	2.00
Dec. 25	San Diego	12,400	12,400	2.00
Dec. 26	San Diego	12,600	12,600	2.00
Dec. 27	San Diego	12,800	12,800	2.00
Dec. 28	San Diego	13,000	13,000	2.00
Dec. 29	San Diego	13,200	13,200	2.00
Dec. 30	San Diego	13,400	13,400	2.00
Dec. 31	San Diego	13,600	13,600	2.00
Jan. 1	San Diego	13,800	13,800	2.00
Jan. 2	San Diego	14,000	14,000	2.00
Jan. 3	San Diego	14,200	14,200	2.00
Jan. 4	San Diego	14,400	14,400	2.00
Jan. 5	San Diego	14,600	14,600	2.00
Jan. 6	San Diego	14,800	14,800	2.00
Jan. 7	San Diego	15,000	15,000	2.00
Jan. 8	San Diego	15,200	15,200	2.00
Jan. 9	San Diego	15,400	15,400	2.00
Jan. 10	San Diego	15,600	15,600	2.00
Jan. 11	San Diego	15,800	15,800	2.00
Jan. 12	San Diego	16,000	16,000	2.00
Jan. 13	San Diego	16,200	16,200	2.00
Jan. 14	San Diego	16,400	16,400	2.00
Jan. 15	San Diego	16,600	16,600	2.00
Jan. 16	San Diego	16,800	16,800	2.00
Jan. 17	San Diego	17,000	17,000	2.00
Jan. 18	San Diego	17,200	17,200	2.00
Jan. 19	San Diego	17,400	17,400	2.00
Jan. 20	San Diego	17,600	17,600	2.00
Jan. 21	San Diego	17,800	17,800	2.00
Jan. 22	San Diego	18,000	18,000	2.00
Jan. 23	San Diego	18,200	18,200	2.00
Jan. 24	San Diego	18,400	18,400	2.00
Jan. 25	San Diego	18,600	18,600	2.00
Jan. 26	San Diego	18,800	18,800	2.00
Jan. 27	San Diego	19,000	19,000	2.00
Jan. 28	San Diego	19,200	19,200	2.00
Jan. 29	San Diego	19,400	19,400	2.00
Jan. 30	San Diego	19,600	19,600	2.00
Jan. 31	San Diego	19,800	19,800	2.00
Feb. 1	San Diego	20,000	20,000	2.00
Feb. 2	San Diego	20,200	20,200	2.00
Feb. 3	San Diego	20,400	20,400	2.00
Feb. 4	San Diego	20,600	20,600	2.00
Feb. 5	San Diego	20,800	20,800	2.00
Feb. 6	San Diego	21,000	21,000	2.00
Feb. 7	San Diego	21,200	21,200	2.00
Feb. 8	San Diego	21,400	21,400	2.00
Feb. 9	San Diego	21,600	21,600	2.00
Feb. 10	San Diego	21,800	21,800	2.00
Feb. 11	San Diego	22,000	22,000	2.00
Feb. 12	San Diego	22,200	22,200	2.00
Feb. 13	San Diego	22,400	22,400	2.00
Feb. 14	San Diego	22,600	22,600	2.00
Feb. 15	San Diego	22,800	22,800	2.00
Feb. 16	San Diego	23,000	23,000	2.00
Feb. 17	San Diego	23,200	23,200	2.00
Feb. 18	San Diego	23,400	23,400	2.00
Feb. 19	San Diego	23,600	23,600	2.00
Feb. 20	San Diego	23,800	23,800	2.00
Feb. 21	San Diego	24,000	24,000	2.00
Feb. 22	San Diego	24,200	24,200	2.00
Feb. 23	San Diego	24,400	24,400	2.00
Feb. 24	San Diego	24,600	24,600	2.00
Feb. 25	San Diego	24,800	24,800	2.00
Feb. 26	San Diego	25,000	25,000	2.00
Feb. 27	San Diego	25,200	25,200	2.00
Feb. 28	San Diego	25,400	25,400	2.00
Feb. 29	San Diego	25,600	25,600	2.00
Mar. 1	San Diego	25,800	25,800	2.00
Mar. 2	San Diego	26,000	26,000	2.00
Mar. 3	San Diego	26,200	26,200	2.00
Mar. 4	San Diego	26,400	26,400	2.00
Mar. 5	San Diego	26,600	26,600	2.00
Mar. 6	San Diego	26,800	26,800	2.00
Mar. 7	San Diego	27,000	27,000	2.00
Mar. 8	San Diego	27,200	27,200	2.00
Mar. 9	San Diego	27,400	27,400	2.00
Mar. 10	San Diego	27,600	27,600	2.00
Mar. 11	San Diego	27,800	27,800	2.00
Mar. 12	San Diego	28,000	28,000	2.00
Mar. 13	San Diego	28,200	28,200	2.00
Mar. 14	San Diego	28,400	28,400	2.00
Mar. 15	San Diego	28,600	28,600	2.00
Mar. 16	San Diego	28,800	28,800	2.00
Mar. 17	San Diego	29,000	29,000	2.00
Mar. 18	San Diego	29,200	29,200	2.00
Mar. 19	San Diego	29,400	29,400	2.00
Mar. 20	San Diego	29,600	29,600	2.00
Mar. 21	San Diego	29,800	29,800	2.00
Mar. 22	San Diego	30,000	30,000	2.00
Mar. 23	San Diego	30,200	30,200	2.00
Mar. 24	San Diego	30,400	30,400	2.00
Mar. 25	San Diego	30,600	30,600	2.00
Mar. 26	San Diego	30,800	30,800	2.00
Mar. 27	San Diego			

Interesting Lecture on the Air Mail

An interesting address on the accomplishments and the future of the U. S. Air Mail Service was made by Col. Paul Henderson, Sec. Ass't Postmaster General, at the New York University on Oct. 22.

After reviewing the work of the Air Mail from its earliest beginnings to the successful accomplishment of the day-and-half through service from coast to coast, Col. Henderson said:

"We do not intend to stand still. We hope to be permitted to add to this transcontinental route, first, by the scheduling of other operations over it during the 24 hr. period. We hope soon to be operating out of New York early enough for delivery to Chicago the next morning. We hope to secure additional and faster air mail service to the trans-Pacific. The trans-Pacific, the expansion of air mail service, the development of the commercial vehicles of the air, we will be able to reduce our schedule time between the Atlantic and the Pacific. We will be able to increase the frequency of our dispatches. We will

"In the last analysis, efficiency of transportation may be measured by its cost per ton-mile, its regularity and dependability, the speed of delivery, and the safety of the mail. These are requirements of speed and economy, but much attention is to be concentrated in the matter of cost. The present costs of operating the Air Mail Service is \$2.63 per ton-mile. This is altogether too expensive. From now forward, the most urgent task of the Post Office Department is to attempt to bring down this cost per ton-mile. This means ships with greater carrying capacity. That much space must be available for air mail. I have no doubt that there will be built and put into operation. That there will be that we want plug along for the next few months.

"Those who were pessimistic as to our crowded eight operation were liberal in their criticism of the DeHavilland airplane for such work because of its high taildragger speed. We have experienced with several different types of wings an attempt to lower the cost per ton-mile. We have found that we now have two sets of wings other than those regularly used on the DeHavilland, which do permit of the slower landing of this ship. One of these designs is available to G. M. Baldwin, the other to Greener C. Loesing. Each of these seems to be acceptable, although there are still a few of our pilots who prefer to fly the old style regular DeHavilland wings.

"Now just a little prediction for the future. I predict air transportation at a cost of less than \$2.00 a ton-mile, with speeds approximating 100 mi. an hr. I predict a nation-wide connecting up of all important commercial and industrial centers, with air mail operating at night between most of these centers at an approximately \$1.00 to \$1.50 per ton-mile. I predict the carrying of certain classes of merchandise in the air, and, ultimately, the carrying of passengers."

To Lease Cape May Air Station

Open competitive bids for the leasing of the Naval Air Station at the Cape May, N. J., will be responded by the Navy Department on Dec. 1. The lease will be for a period of 10 years, consisting of that station to a commercial supplier company after open competitive bidding under the provisions of law for a period of five years, renewable at any time, and with the option of renewal at the discretion of the Secretary of the Navy with due following conditions.

The lessee will hold the period of one year from the date of award of the lease, during the construction or operation of a right-of-way at the lease station and carry on such work in an expeditious manner.

That the lessee will assume all expense in connection with the maintenance and repair of such buildings and facilities as are assigned or used and take proper precautions to prevent damage or damage to other structures or buildings, including the necessary police protection of the reservation.

That the lessee will keep the required premises unoccupied for the benefit of the United States in a manner satisfactory to the Navy Department.

That the lessee will hold the United States harmless from all claims of any claimant to premises or property that may be taken through the construction or use of the said Naval Air Station, Cape May, N. J.

That the lessee will operate the said Naval Air Station at its own expense and furnish the necessary heat, light, etc.

That in addition to insurance against fire loss on the property, bond shall be required for safe keeping of government property in the amount of not less than 100 per cent of the aggregate fair market value of the property.

That the government reserves the right to retain the use of that part of the Naval Air Station now used by the Coast Guard and such other portions as may be agreed upon.

That in case of retention of the lease for failure of the lessee to comply with the terms of the lease or for financial convenience or for any other reason than failure of the lessee to hold the lease to his satisfaction, the government may take over the lease unless failure on the part of the lessee to adequately defend the government's interest has resulted in loss to the government, in which case forfeiture of the lessee's property shall be presumed as required by law.

The bidding company awarded the lease will be required to maintain and operate the station as an aviation base, and will be required to return buildings in good condition.

The Baby Oriole Replies

Editor, AVIATION.

I am the recent Carter baby Oriole and what was left of me just returned from Dayton in a box car. You'll remember me from the race—my wings appeared stunted, but it was easy because I hadn't acquired my full growth, and I seemed to get along so well that I think I'll stay "stunted." I am still somewhat shaky after my trip through those two fives and the long ride on the box car, but I expect to be out again.

I was talking today with my older sister, the one that was at Dayton with Jim Bay, and we were looking over *Aviation* and got a wonderful "kick" out of Old Man Caldwell's paragraphs—he is a funny old bird and we want to congratulate him through your column. However, my sister was a little more exact when she had to get up and speak in public, and she was not so bad, but she sure acted in odd to a year atmosphere.

So here she has down over \$6000.00 of paid commercial flying since the first of April this year, has earned \$5,400.00 in addition to her \$1,635.00 bonus money in Dayton, all of it from cross country flights with passengers, etc., newspapers and journals, and it sure has paid off in the end. She is one fine young woman, but I expect to be there for you again, for Jim Bay is two years younger, but I expect to show you that I have potentialities.

Anyways, the time has gone too Old Man Caldwell, I wish you would ask him how much "commercial" flying he has done that year, and if he has earned half as much as we poor old sister.

COLUMBIA BABY ORIOLE 1924
Editor, *AVIATION*

Aircraft Fuels and Lubricants

An extensive and valuable treatise written just last published by the Standard Oil Co. of Indiana. It covers very briefly in plain language the subject of aircraft fuels and lubricants.

The manual is illustrated with countless cuts of the principal types of aircraft engines and planes used in the United States, an airways map and a 1924 U. S. A. map of the mid-western states showing the commercial, government and airmail routes of flight. Much standard information concerning aircraft engines and aircraft engine tables covering the characteristics of the principal types of aircraft engines is also included.

This manual will undoubtedly prove to be of real value to the aeronauts fraternity.

AIRPORTS AND AIRWAYS

Securing the Air Mail

Commercial, business, industrial, and service organizations all over the United States are getting together and pledging themselves to do everything possible to strengthen and encourage the use of the Air Mail Service.

At the Mid-Atlantic Conference, formed some time ago by prominent individuals, doing its utmost through political and otherwise to induce the general public to utilize the air mail service wherever possible.

The latest organization to align itself with similar bodies for the promotion of this service is the Chamber of Commerce of the State of New York which, at its regular October meeting adopted a resolution, reading in part as follows:

"Resolved, That the Chamber of Commerce of the State of New York, approves, in so much as possible the Air Mail Service of this country by the best means in its power, in strengthening the foundations of national defense, to obtain the advantages which should accrue to business and commerce from a more extensive use of the Air Mail Service, and, be it

"Resolved, That as an immediate means toward securing and maintaining interest in the Air Mail all members of the Chamber be urged to participate in the work of the Air Mail Extension Committee as an effective means to this end, and, be it further

"Resolved, That report of this possible and resolutions be sent to the leading organizations throughout the United States.

Friends of Mrs. Frances Bay Region also have adopted a resolution, reading as follows: "To do everything possible to honor the Air Mail Service and the work of the San Francisco Bay region depend for their present expansion and success mainly with the Post and they believe that there is in the instrumental day and night air mail service, not only an amount of very possible value but also a unique medium for the welfare of the city."

The "Friends of San Francisco," a total men's organization, controls the city and has not been taken advantage of to the fullest extent and that, consequently it is being denied of needed support, while the men are losing benefits which would accrue from such patronage. To reverse the existing situation pledge themselves to:

"To offer and make postage changes for air mail."

"To really encourage the use of air mail from each hotel not less than one letter each day from the management and no less than the amount as it is possible to obtain."

"To call the attention of the general public, whenever practicable, to the air mail service and urge that they patronize it."

Conference on Aeronautical Nomenclature

The National Conference on Aeronautical Nomenclature, organized by the National Advisory Committee for Aeronautics, held the first of a series of meetings at Washington on the 26th in office of the latter organization. The meeting was called by Dr. Joseph S. Ames, Chairman of the Conference Committee, to a general demand for a revision of aeronautical nomenclature which was formally recognized at a recent meeting of the National Advisory Committee for Aeronautics. So many new and exciting aeronautical terms have come into use that a general conference of representatives of the Army and Navy air services, engineering societies, and the aircraft industry had become necessary in order to standardize the new language of the air.

At the meeting, the Conference was organized into four subcommittees dealing with nomenclature, engine terms, aircraft and aero-terms.

The term which provoked much criticism at the meeting was the more or less general usage in the newspapers of the word "driftplane" when referring to an aircraft. It was pointed out that the Bismarckia and the XB-3 are "driftplane" ships, driftplane being used only as an adjective to distinguish between the two types of aircraft as distinguishable and those that are not of the type of the Bismarckia as balloons.

The organization of the Conference on Aeronautical Nomenclature is as follows:

Chairman—Major Harold A. Stevens, Capt. George E. Knobell, Capt. E. L. Walsh, Lt. W. G. Clegg, Capt. Frank C. Tamm, Capt. H. C. Richardson, Lt. W. R. Ward, Dr. A. J. S. Davis, Capt. Frank T. Tamm, Lt. Col. E. E. White, Lt. Col. W. H. Abbott, Lt. Col. W. C. Dickenson, Dr. H. L. Dryden, Lt. Col. W. H. Updegraff.

Secretary of Aeronautical Engineers—Greener C. Loesing, W. B. Smith, H. H. Updegraff.

Aeronautical Society of Mechanical Engineers—Dr. W. E. Damrell.

Aeronautical Chamber of Commerce—Greener C. Loesing, W. B. Smith, Dr. E. B. Miller, Lt. Col. W. G. Clegg, George Wood, Lt. Col. S. L. Scott.

National Advisory Committee for Aeronautics—Thomas Campbell, Major W. Ware, Paul E. F. Werner, Lt. Col. W. Lewis, Dr. Joseph S. Ames.

Davenport (Ia.) News

John W. Chan, editor of *The Davenportian*, Davenport, Ia., has arrived home after devoting his fortnight's vacation to the study of American aviation. At Dayton, Ohio, he attended the international air meet and the annual convention of the National Aeronautic Association. He recently reached New York, having been there for the recent meeting of the Post and the First Division in Washington, D. C., in a motor boat. A couple of days at New York aviation centers followed and after returning to Washington he flew from there to Detroit over the U. S. Airways. The landing at Detroit was at Ford Airport, near the home of Henry Ford and the big Ford factory at Dearborn.

Spokane News

By E. H. Pettingill

Material for the North Corps Area National Guard banquets to be held here has been shipped from Eastern points and administration is scheduled to start by Nov. 1. Contracts will be posted before freezing weather starts.

By cutting the passenger rate from \$5 to \$3.50 per passenger, Major Frank H. Meier got crowds out to the Municipal Airport on Oct. 26. Wing walking and parachute jumps created sufficient interest to get crowds to the field and the half rate made business.

The Airplane Americans

American is still far in the lead among the passengers using the air lines which use Le Bourget, the airport of Paris, France. During the month of August Americans traveled 80 per cent of the air travelers, while the British came second with 22 per cent. The French only figured for 5.8 per cent, and Holland for 4 per cent.

Change of Address

The Sky-Ad Sales Syndicate of Chicago announces that it has moved its factory and sales office to 1210-1216 Claypton Ave., Chicago.

Washington Court House Balloon Race

For sixteen years the National Balloon Race has been a big drawing card in the country because of the great progress and interest with advances in the use of other more directly practical aircraft. It has come to a point where the car big enough to fit in no longer sufficient to satisfy popular and scientific interest in this century-old art with human stages now.

Experience of the past year has shown that six to a dozen entries of small balloons and dirigibles in a good number of categories of size and shape enough to fit a seat are enough to provide valuable experience, the best of sport and entertainment to large numbers of people. The Detroit and Akron events, referred to in previous reports, were "Was and What Class" in which many numbers of contestants could also participate. The most difficult to believe was one for the largest dirigible and dirigible for balloons of the third category, 500,000 cu. ft. It was equally successful and deserves special attention because of the remarkable interest that was taken in it and the hardships which had to be overcome to stage it.

These balloons (and dirigibles) representing Detroit, Akron and Washington Court House, Ohio, started from 20 different points in the country, the last being the 100,000 cu. ft. model C-10. A balloon was made for the enormous Akron and schools were sized for safety around. In spite of the threatening weather the surrounding hills were black with people. The refreshment booths, tents and decorations added much to the scene and a very good band furnished music. Yet only two weeks before, the first day of the race had been.

Natural gas for half the inflators was piped in the field. Bottled hydrogels for the balance was brought from Columbus, and three entries were obtained. The National Aeromobile Association gave its sanction and sent experienced officials to assist.

At four o'clock in the afternoon Vardaman and Weller, managers of the Akron National Balloon Company, left on the balloons "Clouds" and "Fog" and their crews rode very safely long miles of balloon. With the help of a good gale from the ground below they cleared the trees and ended off on the headland played the "Star and Stripes Forever."

The "Detroit" started with Thaden and Morton. Being a lighter balloon, it soon had miles of balloon, and shot up rapidly to 20,000 ft. in 500 ft. of time.

Boettcher and Cottin followed in the balloons, "Washington Court House." This was a heavy iron with a heavy balloon, and not even with only three bags of balloon.

Considering that a racing balloon mostly comes from forty to sixty bags of balloon, each of the pilots made a very good showing. They were all further along in the race when Pfeiferberg, W. Va., when he landed. Boettcher made an extremely good showing, staying up all night, and landing near Jefferson, Pa., next morning, only a few miles short of the time when Thaden landed. Boettcher stated fairly good the whole time although he had to go over 2000 ft. in his landing.

Thaden's lot is also most interesting. He and Morton started out a few hundred feet higher and took quite a different route down through the center of West Virginia over mountains 4000 ft. high. They used principally all their ballast in getting over the mountains, and had none left for safety. They were in the air for 16 hours, and had to land in a gully several times during the night. During the entire night there was hardly a sign of habitation until in the early morning when they came upon planes and civilization should

They had been an hour dodging trees that they had not a chance to keep an accurate route, but again they soon determined that they were approaching Appalachia, Va. The crew of the "Detroit" decided that they had better surrender hope, especially as they were out of balloon even to the extent of having to cut out and throw out their ballast, and almost gave up hope of getting home. The flight will undoubtedly go down as an American record for both distance and duration for balloons of the third category.

Bucharest-Constantinople-Angora Air Service

The Franco-Bavarian Aerial Navigation Co. announced a regular service between Bucharest, Constantinople, and Angora on Sept. 3, according to censored advance to the Department of Commerce. A plane leaves Prague daily, except Sunday, at 8 a. m., arriving at 9 a. m. at Bucharest, Bucharest and Constantiople and at 10 a. m. at Angora. The return flight leaves Angora at 12:30 p. m. and arrives at Prague at 1 p. m.

On the return trip, the departure from Angora is at 8:30 a. m. The plane arrives at Constantinople at 11 a. m. in time to catch the train for Istanbul, which arrives at 1 p. m. On the trip from Prague to Angora there is no change in the time tables as these. The hours of departure and arrival for the Istanbul-Angora trip are shown in association with Eastern European times, one hour later for Turkey and one hour earlier for Constantinople. Between Bucharest and Constantinople the trips are made daily except Sunday, but between Constantinople and Angora the service is only three weeks a month.

New Superchargers

A supercharger designed for altitudes up to 25,000 ft. was recently supplied to the Army Air Service by the General Electric Co. This firm recently received an order from the Air Service for fifteen superchargers which will be used on Liberty engined ships.

These superchargers are essentially similar to several previously designed by the General Electric Co. in the records.

The superchargers are rated type T, single stage, 1160 cu. ft. min air delivered per minute, 12 ft. dia. in pressure, 20,000 rpm. At an altitude of 20,000 ft. the air pressure is 10.65 in. Hg. At a rate of 100 ft. per sec. the carburetors are supplied with air at sea level density.

The latest design of a reduced engine speed, the amount of supercharging is maintained by a waste gate in the exhaust manifold. By opening or closing this gate the exhaust gases can either be directed against the turbine wheel, or allowed to escape into the atmosphere.

All American records have been made with planes equipped with General Electric superchargers.

Aerial Photographs for Lighthouse Service

Aerial photographs, taken by an Army plane, were used by the U. S. Lighthouse Service to decide on the proposed establishment of a light on Knob Rock, which lies about 30 ft. to the left of the centermost of the Atlantic Islands. The sea is difficult at times by landing from a boat.

NYU Aero Engineering Course

Special registration for the course in Aeroplane Engineering, E 6, Elements of Aerodynamics and Airships, Deering, will be held on Monday evening, Nov. 10, at 8 p. m., in Room 1002, at the Washington Square Building of New York University, 32 Washington Place, New York City.

REGULATIONS FOR THE WASHINGTON COURT HOUSE BALLOON RACE

	Starting	Endurance	Starting	Distance
Pilot	Pass.	Pass.	Pass.	Pass.
Dr. J. Thaden	Pass.	Pass.	Pass.	Pass.
Mr. F. E. Morton	Pass.	Pass.	Pass.	Pass.
Mr. T. Boettcher	Pass.	Pass.	Pass.	Pass.
Mr. T. Van Cottin	Pass.	Pass.	Pass.	Pass.
Mr. C. C. Weller	Pass.	Pass.	Pass.	Pass.

Name of Person
Name of
Washington Court House
"Gondolas"

UNITED STATES AIR FORCES

U. S. ARMY AIR SERVICE

Army Air Orders

For Capt. Walter Frederick Bellier, A.S.O.R.C., Elizabeth, N. J., to active duty Langley Field, reverting to inactive status over Nov. 20, 1924.

Sgt. Charles L. Dwyer, Gen. Nat. Guard, Hartford, transferred to Air Service, Belling Field.

Sgt. Louis Wilder W. Van Alen and Harvey A. O. Hopkinson, 1st B. Corps Field, relieved from active duty to present to their homes.

Major Geddes M. 284, promoted to release Capt. Thomas H. Smith, 1st B. Corps, from duty to enable him to serve over Oct. 20.

First Lt. Harold D. Smith, A. S., Langley Field, to Fort Lauderdale.

Major Walter R. Wever, A.S., designated officer in charge 1st B. Plane Sqdn., Middlebury A. S. Inf. Dep.

Major Geddes M. 284, assuming First Lieut. Mike S. Clark, A. S., Kelly Field, upon completion of foreign service, relieved.

Captain George House Prichard and Earl Lorne Hinde, A.S., promoted to ranks of majors.

Each of following officers, A. S. from duty at station assigned to Chauncy Field: First Lieut. William L. Wheeler, 1st B. Corp.; Lieutenant H. Young, Bedford Field, First Lieut. Robert G. Moore, Bedford Air Inf. Dep., 1st Lieut. G. Schaefer, 1st B. Corp.

First Lt. Frank M. Paul, A. S., Chauncy Field, to Air Service Tech. School, that station.

Capt. Harold Elmer Weeks, A. S. Off. Res. Corps, assigned to active duty Washington, for training, reverting to inactive status over Nov. 20, 1924.

Major Geddes M. 284, promoted to Capt. John Robert Irwin, 4. S. Off. Res. Corps, reverting to inactive status over Nov. 20, 1924.

Major Geddes M. 284, assuming Capt. Richard J. Kirkpatrick, 1. 4. to date Langley Field, upon completion of tour of foreign service, relieved.

Major Harold Gandy, A.S., Berlin, Germany, to Langley Field, to date.

First Lt. Wendell T. Larson, A. S., Kelly Field, to New York City, under Capt. C. C. Weller, for Naval Zone.

See Log. John F. McNamee, A. S., Kelly Field, to San Francisco, under Capt. George H. Felt, 16, for Hospitals.

Major George Westcott, A. S., designated Commandant A. S. Tech. School, Langley Field.

First Lt. Harry Graham, A. S., relieved as Commandant A. S. Tech. School, Langley Field.

First Lt. Charles L. Bassett, A. S., Ch. A. S. Washington, to Langley Field, to date.

First Lt. James E. Shultz, Wright, A. S., promoted to rank of captain.

Major Capt. James C. Wilkes, A. S. Tech. School, Chauncy Field, relieved.

Major Capt. Albert F. Eichard, A. S., Ballou & Air Sch., Commandant, 1st B. Corp. Field.

Major Herbert L. Dwyer, A. S., Washington, designated as liaison officer of A. S. Army Aer. Corps.

Major Walter G. Kiser, A. S., relieved as liaison officer of A. S. Army War College.

See Log. Charles Alywyn Hessey, A. S., Kelly Field, transferred to Field AF, Fort Sam Houston.

See Log. Charles Alywyn Hessey, A. S., Kelly Field, transferred to Field AF, Fort Sam Houston.

managing officer at Langley Field, Va., to prevent Lie. V. E. Bertrand and G. C. Shand to make an attempt to lower the 500 and 1600 ft. gas engines, which, in addition to 1000 ft. and 2000 ft. gas engines, were used. The record for 500 hrs. is 214.4 mi/hr. and was made by Lie. F. M. Ward and J. D. Price, both of the Navy, on July 22, 1924. The 2000 hrs. course will be flown soon.

The Langley air yacht was equipped with dual controls which enabled the pilots to release each other during the flight. The average speed was 100 mi/hr. with a standard Liberty motor, and started 185 mi. of gasoline.

In an effort to break these two records, on July 16, the two crew men were forced to land on account of motor trouble. Up to this time, however, they had maintained a speed which was 25 mi/hr. greater than that required to break the record.

The Flying Doctor

Recently, Lieut. George H. Thompson, stationed at Keesler Field, Fort Mills, P. I., flew to Crowley Island with Captain Kehler, Medical Corps, to attend Lieutenant Commander of the Coast Artillery Corps, who was sick at Fort Mills. Lieutenant Thompson was on duty as caretaker and hence immediately left, date 30, a gathering in such case. No other officers are stationed at Fort Mills and no doctor could be obtained from Crowley. Due to the extreme roughness of the water, a ship could not be obtained to transport the patient. Luckily, a ship was on the follow boat on the south side of Crowley Island. This ship was harnessed on, and although a typhoon was threatening, the flight was accomplished.

Lieutenant Barge, reports that going and returning he was forced to fly through heavy rain showers which failed to stop him from landing on Crowley. On Thompson's return to Crowley he was told that he was to be a dangerous condition, and Commander Kehler immediately ordered Lieutenant Barge to return the patient, release and wade, arriving after dark. He states that at that time he could not see the road line. No doubt the trip saved Lieutenant Thompson's life, as it was the only means possible of getting medical attention at once. Under ordinary boat conditions a dead weight boat has been lost, due to the heavy seas. It required a long time to make the trip by plane. Had a forced landing occurred, the pilot and passenger would have had a short chance of escape, in such rough seas. The Commanding General, Philippine Department, was greatly pleased and expressed his appreciation both personally and officially regarding the trip.

Flying Over Cities Regulated

The Secretary of War upon recommendation of the Chief of Air Service, has directed the following instructions to Commanding Generals of all Corps Areas, Department Commanders and to the Commanding General, District of Washington:

"No flying will be done near cities at an altitude lower than that which will permit gliding to landing beyond limits on city. No flying will be done at any altitude over or is vicinity of cities, belt roads, fairways, etc."

Macready's Record Authenticated

The Bureau of Standards has just completed the checking of the records made by Lie. John A. Macready, A. S., in the Basington Boomer, Oct. 2, 1924, on which date he started a load of 5000 kg. to an altitude of 30,000 ft. This is a new record for altitude with this weight. The flight was made while the International Air Races were in progress and was witnessed by many thousands of people.

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Model A 1200 cu. in. Standard \$650.00, Standard Airplane \$650.00, 1936-1937 Catalog \$75.00. 12 Warren Street, 100 North Dearborn Street, Chicago, Ill.

TRADE. Boeing Airplane 8.5 aeronautic 180 hp Hall Model 100 Standard. 1936-1937 Catalog \$75.00. For Sale 2 passenger Cessna \$650.00. For Sale Mystery One 1936-1937 Catalog \$75.00, one 1936-1937 Catalog \$50.00. One Standard 180 hp \$150.00. Wal trade ready for Model A. A. Harbeck, 1220 Donaldson Street, Burlington, Iowa.

FOR SALE. Five Passenger Standard Hispano-Suiza, Hispano motors, 100 hp, one 1936-1937 Catalog \$95.00. Three place Jarrow, H. H. Koenig, 6 Duke Apartments, 3rd & Main Streets, Dayton, Ohio.

SP Flying Boat with DX-35 motor, both in original condition, 2 seats, extra propeller, \$400.00. S. B. Morgan, Naval Air Station, Fort Hamilton, Brooklyn, N. Y.

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ON Friday, October 3rd, seven Army planes raced at Dayton, Ohio. The race was won by a Martin Bomber more than six years old. Before it came to the racing field this Martin Bomber had traveled over 350,000 air miles—more than 14 times the distance around the world.

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